

FLITECAM Spectral Passbands

SOFIA

Wavelength range: **1 - 5.5 μm**

Direct imaging mode, and grism spectroscopy mode.

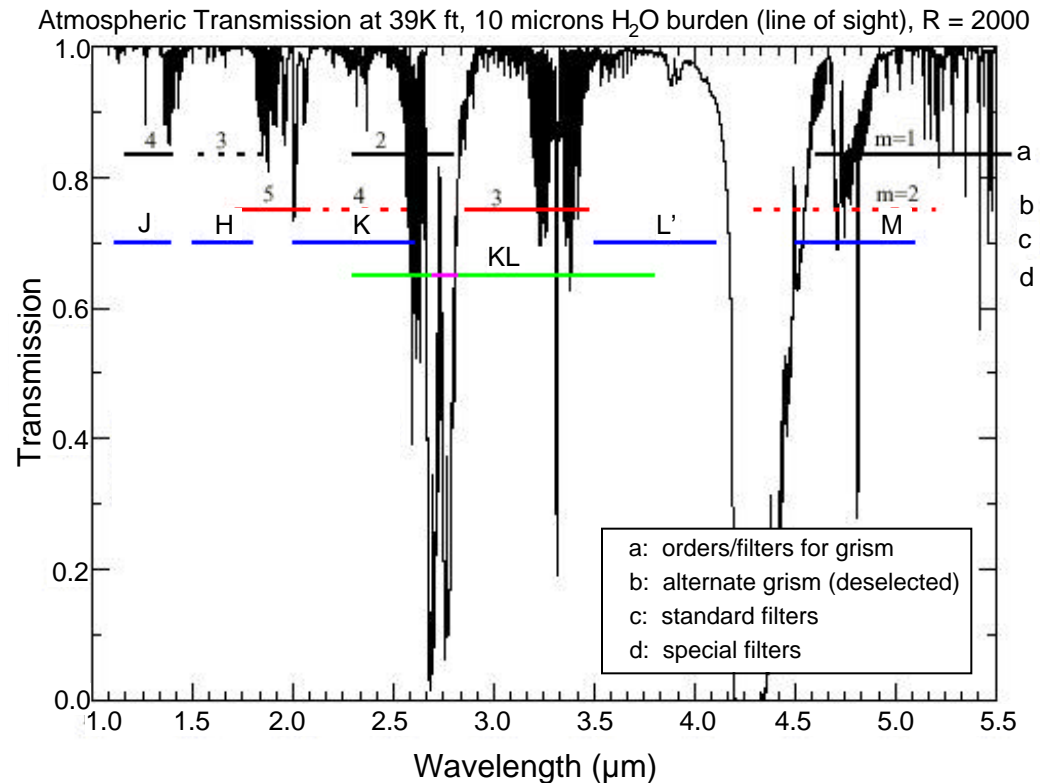
High-speed imaging at
~12 full frames per second, or
16x8 subframe at ~30 kHz.

Broadband imaging filters:

- Standard J, H, K, L', M passbands
- "KL" : 2.3 - 3.3 μm

Capability to use narrow-band filters e.g.:

C_2 :	1.4, 1.8 μm
Paschen :	1.88 μm
Brackett :	1.96 μm
C_2H_2 :	2.0, 2.4, 2.6, 3.0, 3.8 μm
Brackett :	2.63 μm
PAH:	3.3, 5.2 μm
HCN:	3.5 μm



In-flight atmospheric transmission at grism resolution
R = 2000, with planned broadband filter passbands,
and grism orders indicated by labeled horizontal
bars.



FLITECAM Sensitivity

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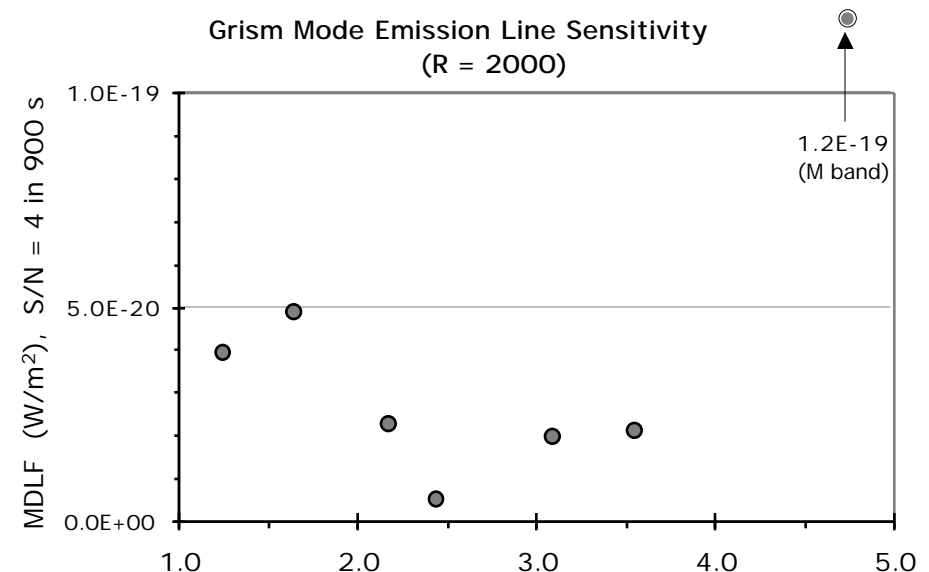
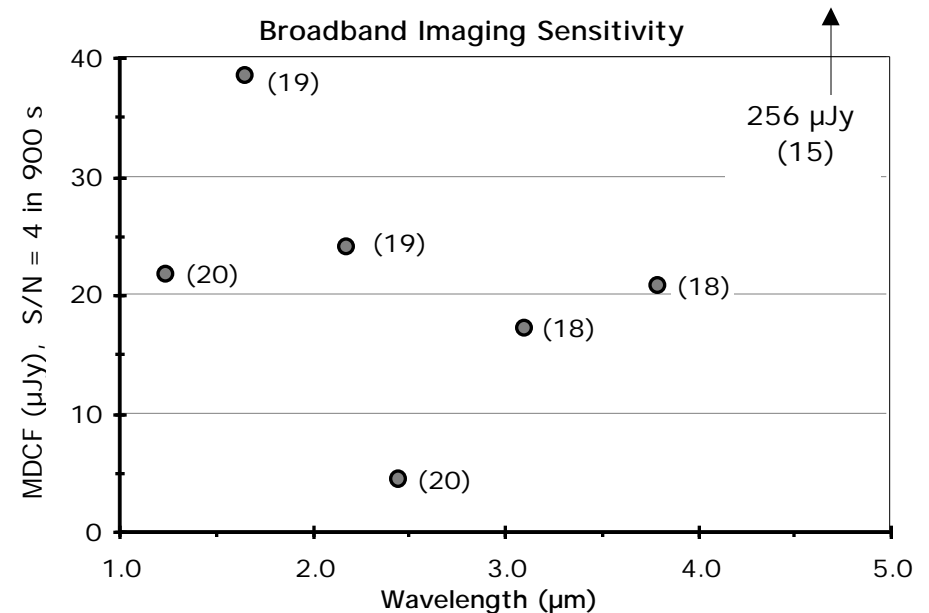
FLITECAM imaging sensitivity is shown for a point source, for each of the broadband filter bandpasses. The Minimum Detectable Continuum Flux (MDCF) density in μJy necessary to get $S/N = 4$ in 900s is plotted. The approximate magnitude value is also shown, based on magnitude = 0 for 1 Lyr in all bands.

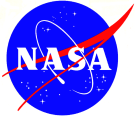
Fast imaging sensitivity:
at fastest full frame rate ($\sim 12/\text{s}$), $S/N \sim 4$ for magnitude ~ 9 in K-band.
At 10 kHz subframe rate, K mag. ~ 2 (TBC).

The lower graph shows FLITECAM emission line sensitivity in grism mode, centered in the same bandpasses. MDLF is the “minimum detectable line flux”, 4 in 15 minutes (900s).

MDLF scales roughly as $(S/N) / \sqrt{t}$
where t = net integration time

Calibration and setup overhead time is roughly 10%





FLITECAM Angular Resolution

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Beam size shown is the instrument FWHM size for nominal operating conditions, including in-flight image quality.

Format: 1024 x 1024 pixel array

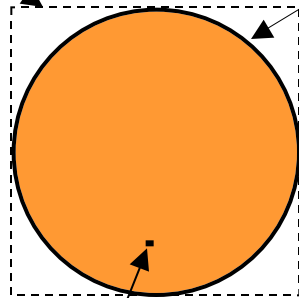
0.48" x 0.48" pixels

Array perimeter

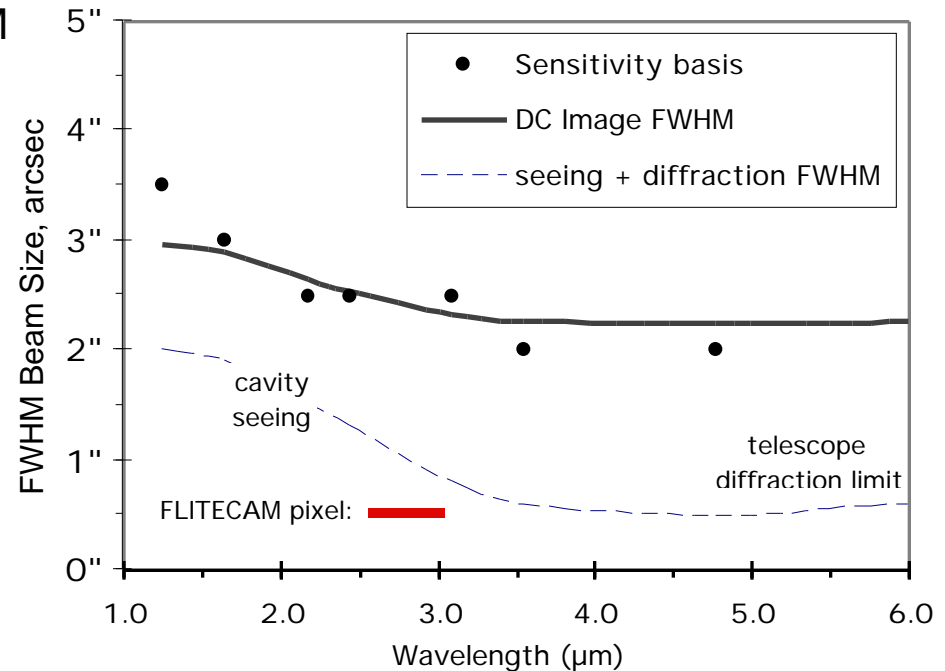
Field stop

FOV:

8' diameter



**4" x 8" minimum subframe
for max. 30 kHz readout
rate (example location)**



Note:

SOFIA and all first light focal-plane instruments are now in development. All sensitivity and resolution data are preliminary, and based on anticipated performance of the observatory and the instruments. Actual performance of the SOFIA telescope and instrument combination will be established after flight operations begin. Telescope performance is expected to be upgraded during the first two years, and instrument performance may be upgraded, or additional modes or capabilities may be added.